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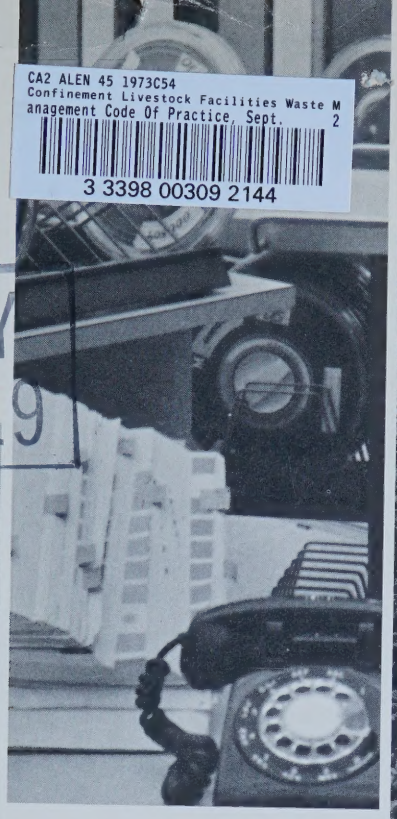

Alberta
ENVIRONMENT

HON. W. J. YURKO, MINISTER

DR. E. E. BALLANTYNE, DEPUTY MINISTER

CONFINEMENT LIVESTOCK FACILITIES WASTE MANAGEMENT CODE OF PRACTICE

SEPTEMBER, 197

ENVIRONMENTAL
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CONFINEMENT LIVESTOCK FACILITIES WASTE MANAGEMENT

CODE OF PRACTICE

SEPTEMBER ,1973

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CONFINEMENT LIVESTOCK FACILITIES WASTE MANAGEMENT

CODE OF PRACTICE

SEPTEMBER, 1973

Alberta
ENVIRONMENT
AGRICULTURE

FOREWORD

THIS PUBLICATION IS INTENDED TO SERVE AS GUIDELINES FOR ANYONE CONCERNED WITH THE ESTABLISHMENT AND OPERATION OF NEW LIVESTOCK CONFINEMENT FACILITIES, EXPANSION OF EXISTING LIVESTOCK ENTERPRISES GIVING DUE REGARD TO WASTE DISPOSAL MANAGEMENT. THIS CODE OF PRACTICE IS SUBJECT TO INTERPRETATION AND APPLICATION TO COVER SPECIAL CASES WHICH MAY EXIST OR DEVELOP FROM TIME TO TIME. IT SHALL NOT REPLACE, BUT RATHER COMPLEMENT PROGRAMS AND STATUTORY REQUIREMENTS UNDER THE CLEAN WATER ACT AND THE CLEAN AIR ACT THAT RELATE TO THE AGRICULTURAL USE AND DEVELOPMENT OF LAND AND THE ENHANCEMENT OF ENVIRONMENTAL QUALITY.

Prepared upon recommendation of the Intensive Livestock Operations Committee.

Membership comprised of personnel from the following agricultural industry and university groups and Alberta government departments:

Alberta Commercial Egg Producers Association
Alberta Cattle Commission
Western Hog Growers Association
Western Stock Growers Association

University of Alberta - Edmonton

Alberta - Agriculture
Alberta - Environment
Alberta - Health & Social Development
Alberta - Labour
Alberta - Lands & Forests
Alberta - Municipal Affairs

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PART 1

GUIDELINES FOR THE ESTABLISHMENT AND OPERATION OF CONFINEMENT LIVESTOCK FACILITIES IN ALBERTA

INTRODUCTION

Growing public concern is being registered about all forms of pollution of our environment. At the same time, intensive livestock operations, some of them on limited land areas, are increasing in number and size.

This trend toward animal confinement for the production of eggs, meat, and milk, coupled with the separation of animal feeding operations from feed production areas, tends to intensify the problems of handling animal wastes and this increases the probability of causing pollution.

The number of residential dwellings on or near farmland is increasing. This trend will increase the need for properly designed and managed livestock facilities and consideration of land-use policies in livestock production areas. Animal waste management must be given serious consideration by producers to minimize problems with existing or new production facilities.

WHEN NON-AGRICULTURAL ACTIVITIES ARE TO BE CARRIED OUT IN ESTABLISHED AGRICULTURAL AREAS, THOSE CARRYING OUT SUCH DEVELOPMENTS SHOULD BE AWARE THAT COMPLETE ODOR CONTROL IS BEYOND PRESENT TECHNICAL CAPABILITIES. THESE GUIDELINES DO NOT IN ANY WAY, CONDONE ENCROACHMENT BY DEVELOPERS ON AGRICULTURAL OPERATIONS AND STRESS THAT WHEN CONFLICTS RESULT FROM SUCH ENCROACHMENT, MUCH OF THE RESPONSIBILITY SHOULD BE ACCEPTED BY THE DEVELOPERS AND NOT ONLY THE AGRICULTURAL OPERATOR.

The approach taken by these guidelines is towards a balanced ecological system. Emphasis is placed on the use of land as a recycling system although

nutrients returned to the farmland must be in balance with those removed by the crops grown. Hopefully, recommendations made in these guidelines will be consistent with the above approach and will provide reasonable and practical alternatives to waste management problems.

1. THE PURPOSE AND INTENT OF GUIDELINES

Guidelines have been formulated to provide a technical base upon which livestock operators can develop without causing undue environmental impact. The purpose and intent of such a program are as follows:

(a) to provide up-to-date technical information with regards to waste management and pollution control systems.

(b) to familiarize producers with agencies and authorities who have jurisdiction in the planning, sub-dividing, environmental, construction, and health aspects of livestock production facilities.

(c) to provide flexibility in interpretation and application to cover the many special situations encountered on Alberta farms.

(d) to promote sanitation and an overall sound management program realizing this will eliminate many waste pollution problems.

(e) to ensure certain minimum requirements for livestock developments for the benefit of land-use planners, credit agencies, and administrators of pollution control programs.

(f) to promote animal waste as a resource to be reutilized in crop production.

2. ADMINISTRATION OF THE GUIDELINES

(1) Farmers are encouraged to utilize the advisory services of the Department of Agriculture, Regional Agricultural Engineers, who will use the guidelines as a basis for assisting in waste management decisions. The Regional Agricultural Engineer will work closely with the Department of Environment and other agencies on matters involving possible pollution.

(2) Application for compliance to the guidelines is voluntary but highly encouraged for the benefit of the livestock operator. Such application should be made prior to commencing construction or expansion of any livestock confinement unit.

(3) Forms to be used in applying for compliance will be available at District Extension offices and regional offices of the Agricultural Engineering Branch of the Alberta Department of Agriculture.

(4) Compliance will be granted jointly by the Department of Agriculture and Department of Environment. The local municipality and Health Authority will be advised when compliance is issued for the purpose of land-use planning and inventory at the local level.

(5) Obtaining compliance is intended to give the farmer some degree of protection should there arise a dispute regarding pollution, providing the manner of operation and level of management is similar to that under which the compliance was granted. The basis for granting or denial of a compliance should be adequately documented in the event a future dispute arises. Compliance means the location and physical facilities are in harmony with the intent of these guidelines.

(6) Agencies Requiring Approvals - the following list indicates the various agencies and authorities that may be involved in a farm building program. Not all listed would be involved in any given project; however, all should be contacted for any necessary authorizations prior to locating and constructing livestock facilities.

AGENCY	JURISDICTION
A. Local Government	Building permits, local by-laws, etc. set-back from roads, intersections.
B. Regional Planning Commission or Provincial Planning Director	Development involving subdivision of land.
C. Department of Highways	Development of Provincial highways.
D. Local Board of Health	Provincial Board of Health Regulations under the Public Health Act, e.g. Division 23 - Regulations Respecting the Keeping of Livestock and Poultry.
E. Department of Environment	Clean Air and Clean Water Acts. Water Resources Act (Water Allocation).
F. Department of Labour (Plumbing Inspector)	Regulations governing plumbing and drainage. Permits are required for all farm plumbing and private sewage disposal installations.
(Gas Inspector)	Permit required for all gas installations under the Gas Protection Act.
(Electrical Inspector)	Permit required for all electrical installations under the Electrical Protection Act.

AGENCY	JURISDICTION
G. Department of Agriculture (Dairy Inspector)	Approval required for dairy facilities including milk handling equipment under the regulations of the Dairyman's Act.

Refer to Part 6 for addresses of above agencies.

3. DEFINITIONS

(1) Livestock - includes those farm animals and poultry listed under 3. (3). and any other animal reared on a farm for commercial purposes.

(2) Animal Wastes - poultry, livestock excreta and associated feed losses, bedding, washwater and other such waste materials.

(3) Animal Unit - the animal unit system indicates the relationship among the various livestock species in terms of their potential to cause a pollution problem through the production of wastes.

(4) Public Place - means any school, church, restaurant, park, hospital, theatre, public building, public institution, or any other building used by the public.

KIND OF ANIMAL		NO. OF ANIMALS EQUIVALENT TO ONE ANIMAL UNIT (A.U.)
Cattle:	Cows or bulls	1.0
	Feeder cattle	1.5
	Replacement heifers	2.0
	Calves	4.0
Swine:	Sows - farrow to weaning (includes gilts suckling - 40 lbs)	1.5
	Feeder hogs (120 lb. average)	5.0
Poultry:	Hens, cockerels	200.0
	Chicks, broilers	350.0
	Turkey hens	50.0
	Turkey feeders	75.0
Sheep	Rams or ewes	10.0
	Lambs	50.0
Horse		1.0
Mink	Female mink plus associated male and kits	100.0

(5) Confinement Livestock Facility - means any facility or mode of operation which confines 10 or more animal units in an enclosure or unenclosed area for the purpose of feeding and rearing livestock.

(6) Feedlot - means any land enclosed by a fence or other means which is used or intended for use for the purpose of feeding or rearing livestock.

(7) Intensive Livestock Operation - means any confinement livestock facility capable of confining, rearing or feeding of more than 200 animal units in an enclosure where the space per animal unit is less than 4000 square feet.

(8) Catch Basin - means any excavated, diked or walled structure or combination of structures designed for the interception and temporary storage of run-off water contaminated by livestock excrement, washwater or similar wastes.

(9) Lagoon - means a facility similar to a catch basin but serves as a continuous liquid manure storage for livestock confinement facilities or intensive livestock operations.

4. DEVELOPMENTS REQUIRING COMPLIANCE

Compliance with the guidelines are not mandatory; however, new livestock confinement operations or existing livestock confinement operations being expanded or remodelled should apply if such developments qualify in anyone of the following categories:

(1) Intensive livestock operation as defined in section 3. (7).

(2) A livestock confinement operation located less than the preferred isolation distances outlined in section 5.

(3) Any operator of a livestock confinement facility desiring compliance regardless of the foregoing conditions.

Aerial view of intensive livestock operation

5. ISOLATION DISTANCES

Many of the environmental problems and agriculture - non-agriculture conflicts exist due to improper location. The following summarizes required and recommended isolation distances for establishing and expanding livestock confinement systems.

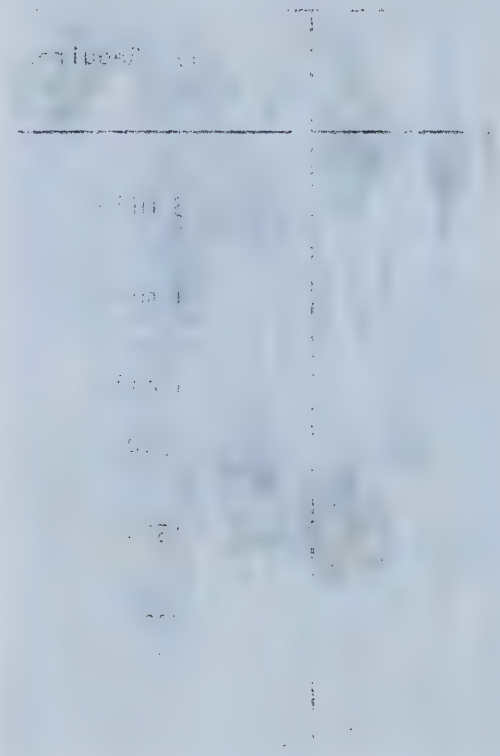


TABLE 1

Confinement Livestock Facility		Distance To Nearest Edge of Facilities Enclosure, Building, Corrals		Catch Basin, Lagoon	
FROM		*(1) Required	Recommended	*(1) Required	Recommended
*(2)	(1) City	3 miles	5 miles	3 miles	5 miles
*(2)	(2) Urban Center (over 500 population)	1 mile	3 miles	1 mile	3 miles
*(2)	(3) Urban Center (under 500 population)	1 mile	2 miles	1 mile	2 miles
	(4) Public Place	1500 feet	1 mile	1500 feet	1 mile
	(5) Country Residence (non-farm)	1500 feet	1/2 mile	1500 feet	1 mile
	(6) Country Residence (farm)	500 feet	1/2 mile	500 feet	1 mile
	(7) Surface Water	50 feet	300 feet	50 feet	100 feet

*(1) Required by Provincial Board of Health Regulations Respecting the Keeping of Livestock and Poultry, Division 23.

*(2) Required only where 100 or more head of cattle are kept.

6. DESIGN OF LIVESTOCK FACILITIES

(1) General Design Guidelines

A. Foreign water or water originating upslope from the feedlot should be diverted around the feedlot, manure storage area and run-off collection facilities. This precaution will minimize the size of catch basins and the cost of waste water disposal. Diversion can be accomplished by constructing dikes, and/or interception ditches.

B. All intensive livestock operations should be located or constructed so that all run-off from the confinement area will remain on the operator's property. This is necessary to prevent surface water contamination and nuisance to neighbors. This stipulation excludes the establishment of such facilities on the flood plain of all perennial and intermittent streams. Prevention will likely require the construction of catch basins.

C. Although investigations are not conclusive, it appears unlikely that ground water contamination occurs directly under a feedlot unless the soil is composed primarily of gravels. Evidence indicates that the soil immediately below the surface of a feedlot becomes impermeable to water and contaminants. There are indications, however, that the run-off leaving the feedlot may infiltrate the soil in drainage channels and cause ground water contamination unless it is trapped in an impervious storage structure. The soil conditions should be investigated prior to development especially under drainage and diversion channels as well as catch basins and lagoons.

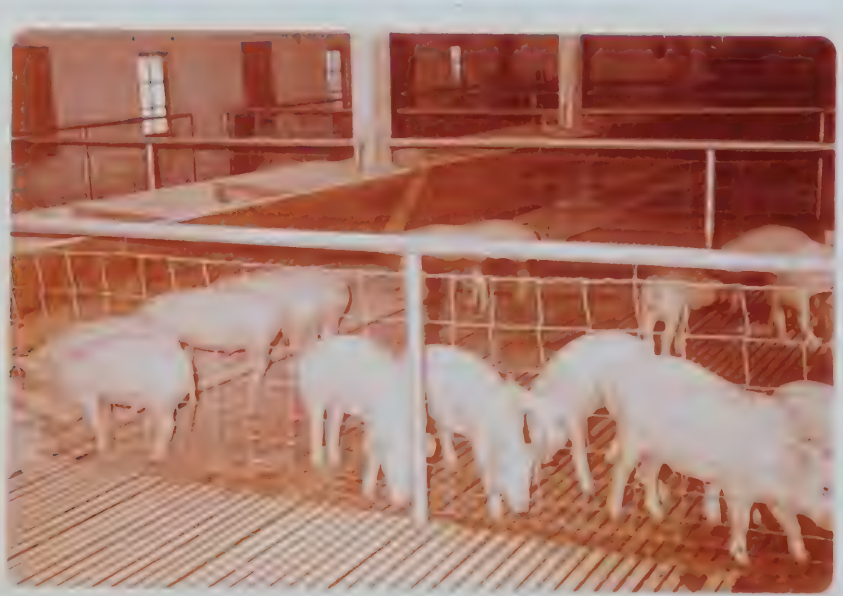
D. Storage facilities should be large enough to minimize winter manure spreading and facilitate land spreading to optimize crop utilization of nutrients.

E. Manure storage structures must be adequately watertight to prevent seepage into surface or ground water.

F. In accordance with the Provincial Board of Health Regulations Respecting the Keeping of Livestock and Poultry, the method of collection, storage, transportation and final disposal of manure is subject to the approval of the Local Board of Health. In the case of any piggery which will contain more than 500 pigs or a poultry keeping operation where more than 5,000 birds will be kept, Local Board of Health approval of the method of collection, storage, transportation and final disposal of manure must be obtained before the piggery or poultry keeping operation is commenced.

G. Dead animals must be disposed of in a manner acceptable to the Local Board of Health.

H. Farm buildings should be designed in accordance with the Canadian Code for Farm Buildings (Farm Building Standards) 1970.



Confinement livestock facility - note slatted floor

(2) Components

A. (a) Manure Storage

Manure storage is desirable in most waste management systems to eliminate the daily chore of manure disposal and also to facilitate application of manure on land at optimum times for crop utilization. Various types of storage are suitable provided they are watertight, easily emptied, and of sufficient capacity. Concrete tanks are common; however, earthern basins may be required to collect feedlot run-off.

Most manure storage, except where aerated, undergoes anaerobic bacterial breakdown resulting in noxious gases being produced. An odor nuisance can be created by the storage facility as well as an operator hazard due to the toxic gases produced.

(b) Calculating Manure Storage

The size of manure storage depends on the type and number of animals, the length of storage and the volume of dilution water added.

Storage size can be determined with the following formula:

$$Vs = (Na \times Vm \times T) + Vw$$

Vs = volume of storage in cubic feet

Na = number of animals confined during the storage period

Vm = volume of manure produced in cubic feet per animal per day (See Table 2)

T = storage time in days

Vw = volume of dilution water required for liquid manure storages in cubic feet

Table 2 (Table F-1 in Canada Animal Waste Management Guide)

TABLE 2. ANIMAL MANURE CHARACTERISTICS (URINE AND FECES AS VOIDED)

Class of livestock	Volume of manure per animal*	Volume of manure and bedding per animal*	Undiluted manure moisture	Urine in manure	BOD per animal	Nutrients per animal		
						N	P_2O_5	K_2O
	ft^3/day	ft^3/day	%	%	lb/day	lb/day	lb/day	lb/day
Cattle								
-Beef or dairy calf (0 to 3 mo)	0.19							
-Beef or dairy calf (3 to 6 mo)	0.25							
-Beef feeder or dairy heifer (6 to 15 mo)	0.50	0.6		25		0.07-0.18	0.06-0.17	0.04-0.1
-Beef feeder or dairy heifer (15 to 24 mo)	0.75	0.8						
-Beef cow (1200 lb)	1.0	1.2						
-Dairy cow (1200 lb)	1.6		85-87	30	2.5	0.13-0.42	0.14-0.21	0.16-0.36
-Open pen loose housing		2.0						
-Free stall loose housing		1.7						
-Tie stall		1.8						
Swine								
-40-200 lb (8 to 22 wk)	0.18		80-85	40	0.4	0.03-0.1	0.05-0.15	0.26-0.54
-10-25 lb (3 to 6 wk)	0.04							
-26-50 lb (6 to 9 wk)	0.08							
-51-75 lb (9 to 12 wk)	0.12							
-76-125 lb (12 to 16 wk)	0.18							
-126-175 lb (16 to 20 wk)	0.26							
-176-200 lb (20 to 22 wk)	0.32							
-Sow	0.40	0.48						
Chicken				0				
-Broiler (0 to 4 lb)	0.0028	0.005	litter-25					
-Laying hen (5 lb)	0.005		75-80		0.015	0.0012-0.005	0.002-0.01	0.0005-0.0045
Turkey			75	0				
-Broiler (0 to 14 wk)	0.0045							
-Growing hen (0 to 22 wk)	0.0065							
-Growing tom (0 to 24 wk)	0.01							
-Breeder	0.012							
Rabbit (doe and litter)	0.025							
Ewe sheep	0.10	0.15	75	20				
Horses	0.92	2.0	75	25				

* From Canadian Code for Farm Building, 1970, Associated Committee on the National Building Code, National Research Council of Canada, Ottawa.

B. Earthen Catch Basins

Earthen catch basins are employed to intercept contaminated run-off from confined livestock areas. Storage capacity of catch basins depends upon hydrological, topographic and climatic factors which vary from area to area. Design of the catch basin will require investigation of the local conditions.

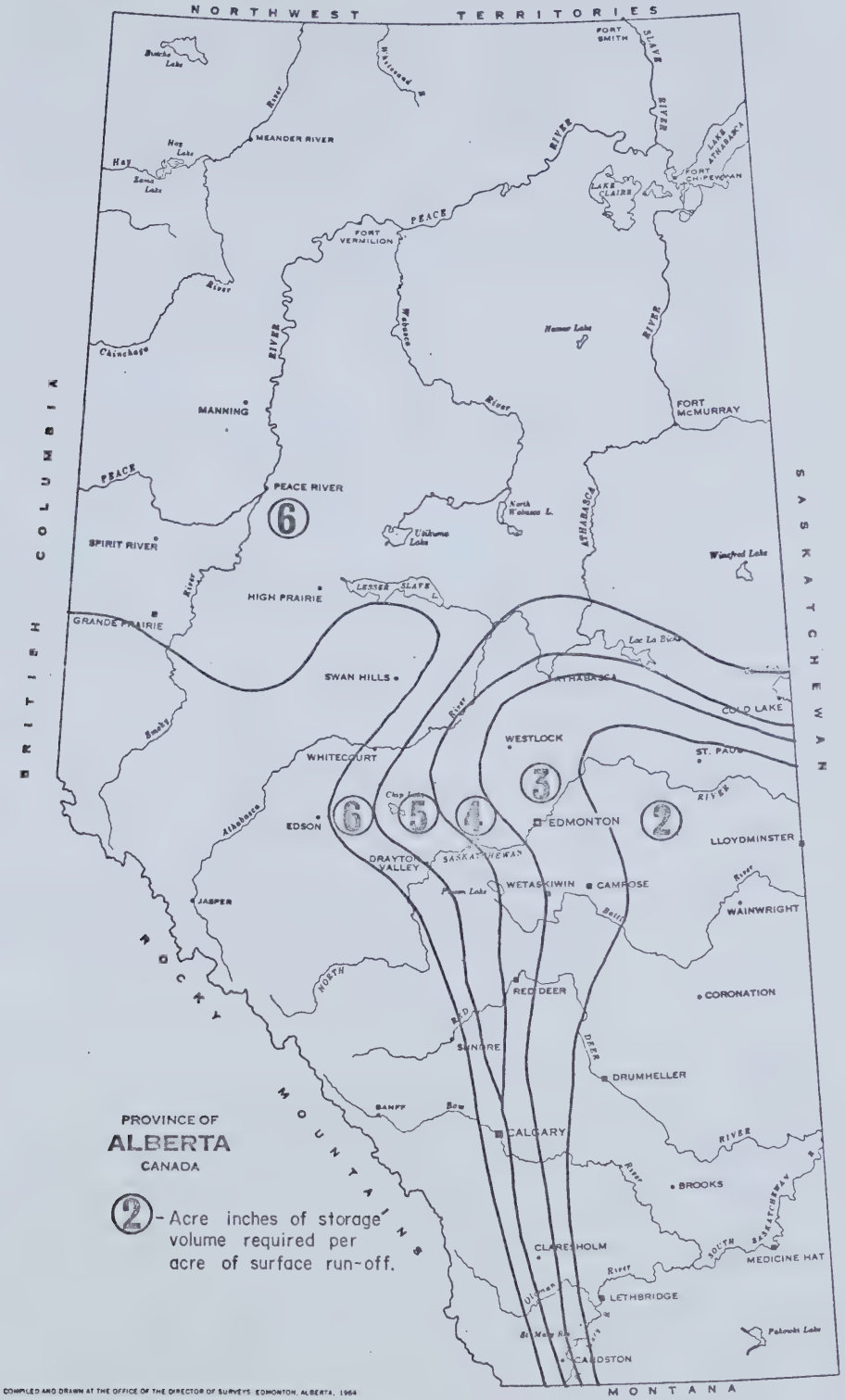
(a) Design

(1) Volume - properly located leak-proof retention ponds should be designed to hold the number of acre inches indicated in Figure 1 for each acre of feedlot, alley and manure storage area draining into the pond, plus one foot of freeboard. Figure 1 was prepared using 10 year, 24-hour rainfall data in combination with the anticipated annual spring run-off for various parts of the Province.

(2) Construction - subsoil investigations should be made prior to planning to reduce the possibility of seepage. Top soil must be stripped from embankment areas and the dikes must be constructed of impervious compacted material. The pond shape should be designed for use of solids removal and maintenance. Side slopes should be between 1:3 and 1:5. The completed structure should be fenced but provided with an adequate access gate. Construction of catch basins should be such that clean-out of accumulated solids is easily facilitated. A concrete slab or ramp should be considered for the entry of loading equipment.

(3) Disposal - run-off in Alberta is quite variable from year to year so that the volume of waste collected in the pond cannot be predicted on a yearly basis. It is not uncommon for spring run-off in south eastern Alberta to be insignificant.

Figure 1-
DESIGN STORAGE REQUIREMENTS FOR SURFACE RUN-OFF



In this case, liquid disposal could be accomplished by evaporation provided not more than one major rainstorm occurs. If average or above average spring run-off occurs, the pond should be emptied as soon as possible. This should be done by applying the liquid to land by tank or spray irrigation. In areas of more spring run-off and lower evaporation, land application of the liquid may be necessary on a regular basis.

(b) Alternate Method

Occasionally, topographic conditions may provide a large level land area which can be provided with low dikes to contain the run-off. The purpose of this system is to allow the run-off water to spread evenly but thinly over the area and eliminate the necessity of pumping or hauling the waste. The area should be cropped to facilitate nutrient removal and recycling. With this method, the spreading area should be sized so that no more than 4 inches of run-off be applied. This means that in the south-east part of Alberta, one acre of land for spreading should be provided for every 2 acres of feedlot.

C. Walled Storage

Open walled storage is suitable for semi-solid manure. Wall height depends upon the volume required and the piling characteristics of the manure. A ramp entrance provides access for manure removal equipment. Where free liquid threatens surface water, it should be collected in a sump for later removal and land spreading.

D. Storage Lagoons

Essentially, all livestock lagoons in Alberta operate anaerobically. Odor is, therefore, a very important consideration when designing and locating a lagoon. Factors in lagoon operation are as follows:

(a) Location: A lagoon should be located:

(i) far enough from any residential area to avoid creating a nuisance (meet isolation distance requirements, section 5).

(ii) on the leeward side of the farm house.

(iii) in an area with suitable space for expansion.

(iv) to exclude or, in low rainfall areas, to control surface drainage to the lagoon from adjacent areas.

(v) to avoid contamination of surface water.

(vi) in an area where impervious clay exists. If sand or gravel is encountered in the excavation, an impervious lining of clay, butyl film or equivalent material will be required to protect against ground water contamination.

(b) Access: Access into the lagoon should be provided for removal of accumulated solids either by means of a pier or a concrete ramp and also for the entry of a pump for regular removal of liquids through an irrigation system or a similar method.

(c) Problems: Factors that interfere with decomposition in a lagoon such as salt build-up, may require special consideration and technical help should be sought from someone familiar with waste management.

(d) Multiple Lagoons: Consideration should be given to multiple lagoons so that alternate filling and cleaning can be facilitated.

(e) Inlets: Lagoon inlets should be located so that solids will be distributed over the lagoon and not allowed to accumulate near the edge. Both above-surface and below-surface inlets may be used depending upon the topographs and elevation differences at the lagoon site.

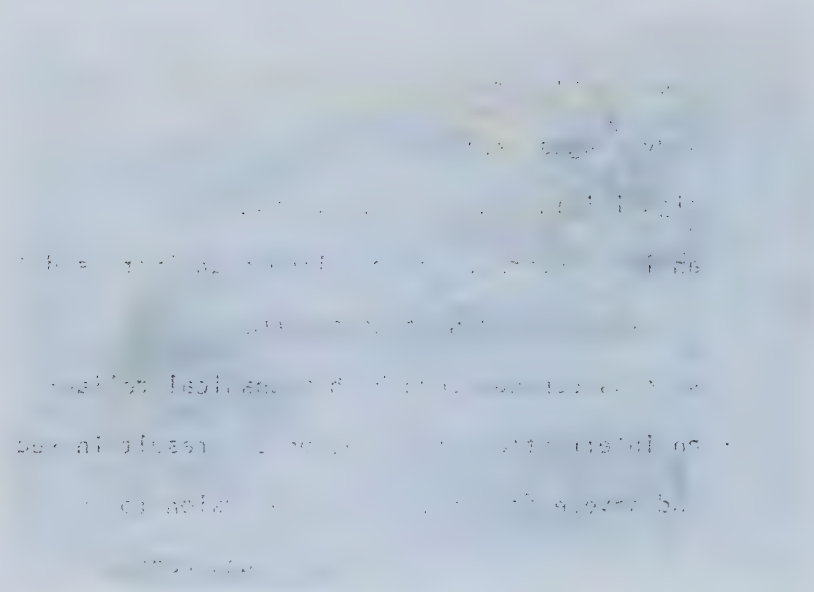
f) Construction: Design requirements are similar to those described under section 6. (2) - B.

Storage lagoon

E. Mechanically Aerated Systems

(a) Oxidation Ditch

The function of an oxidation ditch is to maintain a high dissolved oxygen level in stored manure so that aerobic conditions will exist. Aerobic bacteria reduce the biodegradable organic matter to stable minerals, with carbon dioxide and water as by-products, all of which are non-noxious.



Sludge is a by-product of both anaerobic and aerobic systems and requires periodic removal and land disposal.

Advantages of an oxidation ditch are:

- reduction or elimination of noxious odors in the building and during transport and field spreading.
- may reduce waste volume, especially the solids portion.
- reduces fly problems.

Disadvantages are:

- high initial and operating costs.
- an in-the-barn ditch may impose an increased load on the ventilation and heating system.
- success depends upon high mechanical reliability.
- an interruption of operation can result in sedimentation and severe foaming. Rapid reversion to anaerobic conditions will occur with the resultant gas hazard when the ditch is restarted.
- system is difficult and expensive to adapt into an existing operation.
- foaming can occur under some operating conditions.

(b) Aerated Lagoons

Air is mechanically introduced by means of floating aerator or perforated pipe. Cold weather creates problems with this system so its operation is limited to the warmer part of the year. Aeration systems of all types, are undergoing considerable development, therefore, design criteria should be discussed with the Agricultural Regional Engineer prior to construction.

7. ANIMAL WASTE MANAGEMENT

(1) General Guidelines

It is important that manure be managed to maintain the health and safety of humans and animals. Experience has demonstrated that pollution hazards can come from the mismanagement of manure. However, with an understanding of the potential sources and consequences of pollution, the provision of adequate facilities and the use of care and common sense in their operations, pollution can be controlled. Most pollution hazards from animal manure can be controlled by following these management principles:

(a) Access to sufficient land for crop utilization of manure and limiting the rate and time of application to avoid water pollution.

(b) Separation between confined animals and neighbors to avoid nuisance complaints, by allowing dilution of unavoidable barn and feedlot odors and flies and dissipation of noise.

(c) For housed animals, frequent manure removal from the barn into separate and undisturbed storage to minimize odor levels in the barn and avoid animal and human exposure to gas hazards, particularly from stored liquid manure.

(d) Sufficient manure-tight storage capacity to control surface water and ground water pollution and to avoid winter land application of manure.

(e) Rapid soil cover of manure to control odors during land spreading and control manure washing from fields when surface run-off occurs.

(2) Manure Handling Systems

A. Solid Manure

Solid manure is classified as manure undergoing some drying or containing bedding to the extent that a stiff, nonflowing material is obtained.

Transfer of solid manure requires mechanization due to its nonflowing characteristics. An established supply of traditional equipment is available for all solid manure applications.

Solid manure is stored either by stockpiling or by accumulation as in loafing barns and feedlots. The following recommendations should be followed when employing a solid manure system:

(a) Solid manure either stockpiled or accumulated when exposed to the weather is subject to seepage and run-off. Such run-off or seepage should be confined in diversion ditches and graded towards a catch basin as outlined in section 6. (2) - B.

(b) Adequate provisions should be made to prevent the collection of polluted waters within all livestock confinement areas, alleyways, etc. Positive drainage with at least a 2% slope should be provided in these areas.

(c) Walled storage with a concrete pad is recommended for the storage of manure with low straw content such as that from free-stall dairy barns (see section 6. (2) - C.).

(d) Feedlots should be cleaned as early as practical in the spring and frequent enough to minimize flies, odors, and disease problems.

(e) Where necessary, suitable odor, insect and rodent abatement methods should be employed.

Mechanical belt for stacking solid manure

B. Liquid Manure

Liquid manure systems have become increasingly popular due to the adaptability of mechanical handling.

Odor may be a serious problem with many liquid manure systems. Odor production in confinement barns can be minimized when collection facilities are small, requiring manure to be transferred at frequent intervals to a separate storage.

Operation of Liquid Manure Storages:

(a) Disturb liquid manure as little as possible, to minimize the emission of odors. Further reduction of odor can be achieved by covering the storage.

(b) Add only the minimum amount of dilution water necessary to allow agitation and pumping. Excess water increases storage requirements (or reduces the length of storage period for existing structures) and increases the quantities to be handled.

(c) Avoid coarsely ground feeds, particularly with swine. These feeds have created flow and settlement problems in conduits, gutters, and storages. Conduit size for gravity flow of liquid manure should be 8" and preferrably 10" or more in diameter.

(d) Avoid additions of hay, silage or bedding; where hay is fed, chopped hay creates fewer pumping problems than long hay.

(e) Provide adequate agitation before manure removal from storage. AVOID AGITATION WHEN THE WIND DIRECTION IS TOWARD A NEIGHBOR.

(f) When manure enters a separate covered storage through barn openings, exhaust ventilate from the storage, or provide a gas trap to prevent backflow of odorous and dangerous gases into the barn.

(g) REMOVE LIVESTOCK AND OPEN ALL DOORS FOR MAXIMUM VENTILATION WHEN AGITATING OPEN STORAGES WITHIN THE BARN TO AVOID GAS HAZARDS.

(h) Fence open-top outdoor storages to exclude people and domestic animals.

(i) KEEP EQUIPMENT ACCESS COVERS FOR OPENINGS INTO COVERED STORAGES SECURELY IN PLACE WHEN NOT IN USE. COVERS SHOULD WEIGH 40 POUNDS, SHOULD NOT FLOAT, AND SHOULD BE LARGER THAN THEIR OPENINGS OR SECURED WITH A SAFETY CHAIN SO THEY CANNOT FALL INTO THE STORAGE.

(j) AVOID ENTERING AN INDOOR OR COVERED STORAGE, BUT, IF THIS ACTION IS NECESSARY, DO NOT ENTER ALONE. MAKE SURE IT IS WELL VENTILATED AND WEAR A ROPE SAFETY HARNESS WITH AT LEAST TWO MEN STANDING BY ON THE ROPE END OUTSIDE THE STORAGE IN CASE OF EMERGENCY. ADDITIONAL PRECAUTIONS SHOULD BE TAKEN BY WEARING A SELF-CONTAINED BREATHING APPARATUS.

(k) DO NOT SMOKE OR USE MATCHES OR AN OPEN FLAME WHILE INSPECTING AN UNVENTILATED STORAGE TANK AS SOME OF THE GASES PRODUCED FROM THE MANURE, PARTICULARLY METHANE, CAN BE EXPLOSIVE WHEN MIXED IN CERTAIN CRITICAL PROPORTIONS WITH AIR.

(l) Liquid manure storage areas should be designated with warning posters.

Equipment for agitation, pumping and transporting liquid manure should be selected to best achieve the function required. Vacuum tanks are usually satisfactory for pumping and transporting hog manure but the more positive chopper-type are necessary for liquid dairy manure containing some bedding and/or feed.

Handling liquid manure by means of irrigation equipment is undergoing considerable development. This system should be investigated, especially when a lagoon or catch basin is employed in the waste management system.

Spray irrigation of liquid manure

(3) Land Application of Manure

Plans for the development or expansion of livestock facilities should include adequate provision for the final disposal of manure. In most cases, this means a suitable land base near the livestock operation to recycle the manure by cropping.

Too high a rate of manure application results in the release of nitrogen in excess of crop requirements causing crop lodging and a potential for contamination of ground water, particularly when heavily manured fields are subsequently summerfallowed. The livestock concentrations and rates of application suggested in Tables 3 and 4 should result in high crop yields, low ground water pollution potential and improved soil structure.

For the most efficient use of nitrogen from the manure, as well as controlling odors, soil incorporation as soon as possible after application is desirable. Up to 50% of the nitrogen most readily available to the crop may be lost in 2 to 4 days after application if the manure is not incorporated. In some urbanized areas, soil injection or some method of immediate incorporation after application is essential to control odors.

Manure should not be applied on snow where the land is subject to rapid spring run-off into open watercourses.

Table 4 is a guide to assist calculating the acreage required for manure disposal from various livestock. Higher livestock numbers may be feasible in some instances where nitrogen losses are high and experience with the manure handling system and crop requirements has been gained.

Where manure is incorporated immediately after application, the rates may have to be reduced in some cases to avoid cropping problems. The figures take into account average storage, handling and spreading losses in the most prevalent type of operation for the livestock (beef feedlot, hog-liquid pit). Some of the figures in Table 3 (livestock per acre) have been revised downward from previous Alberta guides due

to new information available on the extent of losses and have been calculated to provide approximately 120 - 150 lbs. of available nitrogen per acre. Higher livestock concentrations per acre than those indicated in the table will likely result in cropping problems such as lodging. Consideration must also be given to the type of crop rotation used. For example, if 25% of the land is summerfallowed each year, the livestock per acre calculation should be reduced accordingly. As far as practical, land should be continuously cropped to make the best use of the applied manure.

Recycling of animal wastes by land application

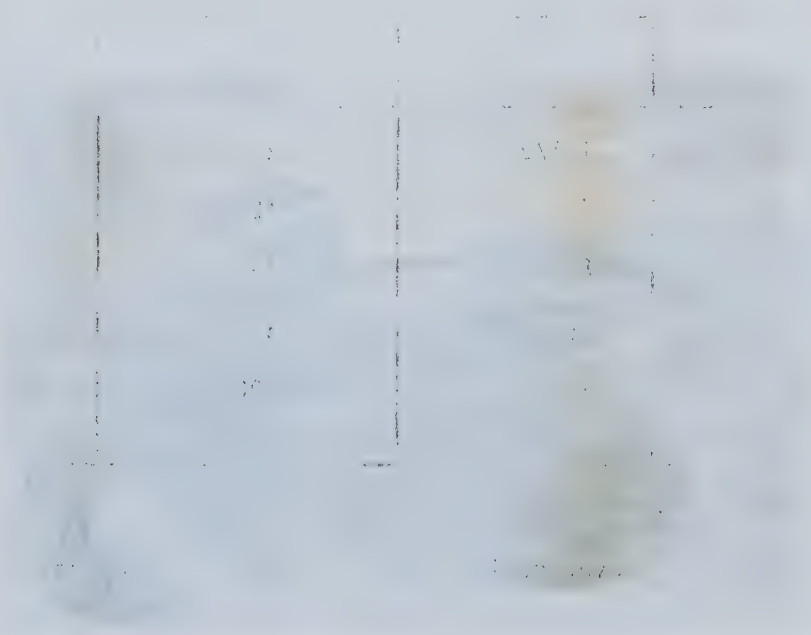


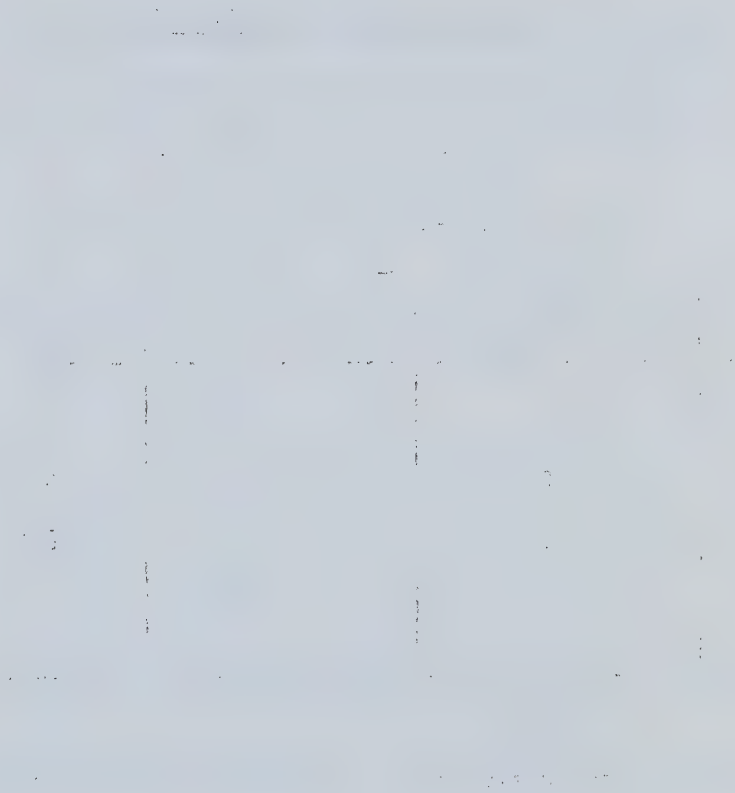
TABLE 3

SUGGESTED MAXIMUM NUMBERS OF LIVESTOCK PER ACRE*

TO PROVIDE OPTIMUM NUTRIENTS FOR CROP PRODUCTION

Livestock	Brown & Dark Brown Soils		Black & Grey-Wooded Soi
	Dryland	Irrigated	
Dairy Cows	1 1/2	3	2
Beef (feeders)	6	12	8
Hogs	8	15	10
Laying Hens	150	300	200
Broilers	300	600	400

*The above figures assume average losses in storage, handling and spreading for both liquid and solid handling systems.



The suggested maximum amounts of animal manures which may be applied to land as continuous applications are shown in Table 4.

TABLE 4

SUGGESTED MAXIMUM ANNUAL APPLICATION RATES FOR ANIMAL MANURES*

Soil Zone	Solid Manure (Tons/Acre)		Liquid Manure (Gallons/Acre)	
	Cattle & Hogs	Poultry	Cattle	Hogs
Brown & Dark Brown				
(a) Dryland	10 - 12	4 - 6	3000 - 6000	1000 - 4000
(b) Irrigated	25 - 30	10 - 12	8000 - 10,000	3000 - 8000
Black & Grey-Wooded	15 - 20	8 - 10	5000 - 8000	2000 - 6000

* The suggested maximum application rates are for continuous annual applications of manure. Larger quantities could be applied; however, the interval between applications must be increased accordingly.

The wide range of suggested maximum application rates of liquid manure indicates the large variation in the nitrogen content of manures in various forms and losses of nitrogen before incorporation into the soil. The lowest application rate in the range would apply to a high nitrogen manure such as from a pit system with little or no additional water from flushing and where the manure is incorporated into the soil immediately after application. The highest application rate in the range would apply to a low nitrogen manure such as from a pit system which receives water from flushing of pens, etc. and where the manure is not incorporated into the soil for a week or more after application. Generally, liquid cattle manure is less variable and less concentrated in nitrogen content than liquid hog manure. In a lagoon system where the lagoon may also receive considerable run-off from the surrounding area, the rate of application may be increased in some cases to 30,000 gallons per acre per year.

WHERE DOUBT EXISTS ABOUT THE RATE WHICH CAN BE APPLIED, MANURE AND SOIL SAMPLES CAN BE ANALYZED BY THE SOIL AND FEED TESTING LABORATORY, O.S. LONGMAN BUILDING, EDMONTON. BEFORE SAMPLES ARE TAKEN, THE LABORATORY SHOULD BE CONTACTED FOR SAMPLING INSTRUCTIONS.

Cereal crops planted in highly manured fields should receive 30 to 40 lbs/acre of P_2O_5 (60 - 80 lbs of 11-48-0 or 11-55-0) to ensure a proper nitrogen to phosphorous balance. On soils low in potash, additional potash fertilizer is also recommended. Where there is still considerable crop lodging, the manure application rate may be too high and should be reduced.

PART 2

PROCEDURE FOR USING THE CODE

1. Agricultural Engineers of the Alberta Department of Agriculture are prepared to advise operators of confinement livestock facilities on the design and layout of proposed new buildings, as well as renovations or expansions of existing facilities, based on the provisions of the Code of Practice. Farmers are encouraged to take advantage of this advisory and planning service before proceeding to build.

2. Initial contact may be made by the operator at the District Agriculturist and Agricultural Engineer regional offices. Appraisal and application forms for a Certificate of Compliance will be available at these offices. Assistance will be provided to appraise the qualifying factors of animal density and location distances that would warrant the operator to make application for a "Certificate of Compliance" for the subject confinement livestock facility.

3. Farmers will be encouraged to make application for a Certificate of Compliance to the regional Agricultural Engineering offices before commencing construction.

4. The Regional Agricultural Engineer will provide the following advisory and planning services:

   (a) Review the proposed development and provide overall direction in the technical, operational and waste management aspects of the confinement livestock facility. This review will assist the operator in his total management program and, therefore, eliminate most environmental problems.

(b) Assist the operator in making contact with other agencies for the purpose of securing any specific authorizations or approvals related to the confinement livestock facility.

(c) Inspect the site of the subject application in most instances.

(d) Complete technical details on the application from and consult with other regulatory and local agencies where necessary. On occasion, alternatives, modifications, and conditions of operations of confinement livestock facility may be required to suit the Code of Practice.

5. The Code of Practice will be used as a basis for granting a Certificate of Compliance and the guidelines of the Code will be interpreted with enough flexibility to allow acceptance of alternative disposal methods not specifically listed in the Code.

6. When Municipal Councils are considering land use planning and zoning changes, they are encouraged to consider the principles of the certification program and the guidance of the Code of Practice as reference information in the following manner:

(a) Due to rapidly changing agricultural technology and the resulting frequent updating of the Code, the substance of the Code should not be adopted literally into legislation.

(b) The Municipal Council, Health authority and other local agencies will be advised when compliance is issued for the purpose of land-use planning and inventory at the local level.

(c) The Code of Practice deems isolation distances between livestock confinement facilities and non-compatible uses essential for community harmony. Any interference with this buffer zone by subsequent land use changes will result in serious complications for established and continued agricultural use of that land. Municipal Councils may

maintain isolation distances by requiring the operator of a confinement livestock facility to obtain a Certificate of Compliance as set out in the Code, and carefully considering applications for non-compatible developments that may encroach or restrict the operation of established confinement livestock facilities which were previously certified.

7. For total effectiveness, an adequate buffer zone should be maintained by the municipality between the operator of a confinement livestock facility who is already established and the urban or semi-urban person wishing to secure a building permit at a later date.

8. The provisions of the Code of Practice and the issuance of a Certificate of Compliance are intended to provide a basis for ensuring that careful planning, good waste management methods and consideration of the rights of others will considerably reduce the risk of environmental problems in the future.

PART 3

CERTIFICATE OF COMPLIANCE

FOR CONFINEMENT LIVESTOCK FACILITIES

Certificate No._____

Application Number_____ This certificate dated_____ 19___

Owner/Operator_____

Owner/Operator Address_____

This certificate refers to_____

_____

_____

On the basis of the application submitted and following a recent inspection of the site, this confinement livestock facility is considered to be in substantial compliance with the requirements of The Confinement Livestock Facilities Waste Management Code of Practice.

Any requirements set out in this Certificate by the Department of the Environment or the Department of Agriculture must be satisfied for this Certificate to remain in force.

Issued jointly by

ALBERTA

ENVIRONMENT

_____

Director, Standards & Approvals

AGRICULTURE

_____

Head, Engineering & Home Design

PART 4

APPRAISAL FORM

1. Animal Density

	KIND OF ANIMAL	Confined			No. per Animal Unit	Animal Units
		Existing	Proposed	Total		
CATTLE:	Cows or Bulls				÷ 1.0	
	Feeder Cattle				÷ 1.5	
	Replacement Heifers				÷ 2.0	
	Calves				÷ 4.0	
SWINE:	Sows				÷ 1.5	
	Feeder Hogs				÷ 5.0	
POULTRY:	Hens, cockerels				÷ 200	
	Chicks, broilers				÷ 350	
	Turkey hens				÷ 50	
	Turkey feeders				÷ 75	
SHEEP:	Rams or Ewes				÷ 10	
	Lambs				÷ 50	
HORSE:					÷ 1	
MINK:	Female & associated males & kits				÷ 100	
OTHERS:						

Total Animal Units: _____

$$\frac{\text{Area of Confinement Facility}}{\text{Total Animal Units}} = \text{_____ square feet per Animal Unit}$$

Section 4. (1) Part 1 of the Code recommends that intensive livestock operations (more than 200 animal units at less than 4000 sq. ft. per animal unit) make application for a Certificate of Compliance.

2. Proposed Location

Less than 5 miles from city	YES	NO
Less than 3 miles from urban center (more than 500 population)	YES	NO
Less than 2 miles from urban center (less than 500 population)	YES	NO
Less than 1 mile from public place	YES	NO
Less than 1/2 mile from country residence (non-farm or farm)	YES	NO
Less than 300 feet from watercourse	YES	NO

Section 4. (2) Part 1 of the Code recommends that livestock confinement facilities not qualifying under Section 4. (1) Part 1, i.e. less than 200 animal units but are located less than the preferred isolation should obtain a Certificate of Compliance. Therefore, if yes is answered to any of the above, application for a Certificate of Compliance should be made to the Regional Agricultural Engineer district office.

PART 5

Application No._____

APPLICATION FOR A CERTIFICATE OF COMPLIANCE FOR THE CONSTRUCTION OR OPERATION OF CONFINEMENT LIVESTOCK FACILITIES

---

1. Operator (Owner - individual, partnership, corporation)

   (a) Name:

   (b) Address:

   (c) Telephone No.: Day _____ Evening _____

2. Local Contact Man (manager, foreman, etc. where other than owner)

   (a) Name:

   (b) Address:

   (c) Telephone No.: Day _____ Evening _____

3. Location

   (a) NW NE
   SW SE quarter of Sec. _____ T _____ R _____ W of _____ meridian

   (b) Distance and direction of proposed facilities from border of nearest urban center, residence, or public place.

   (i)
   _____ Feet / Miles _____ of _____
   Distance Direction Urban Center

   (ii)
   _____ Feet / Miles _____ of _____
   Distance Direction Nearest Residence

   (iii)
   _____ Feet / Miles _____ of _____
   Distance Direction Public Place (Park, School, Resturant, etc.)

4. Site Approval

Does building site and operation comply with:

(a)	Regional Plan	YES	NO	NOT APPLICABLE
(b)	Local Development By-laws	YES	NO	NOT APPLICABLE
(c)	Highways Act	YES	NO	NOT APPLICABLE
(d)	Provincial Board of Health Regulations	YES	NO	NOT APPLICABLE
(e)	Department of Environment	YES	NO	NOT APPLICABLE
(f)	Department of Agriculture, Dairyman's Act	YES	NO	NOT APPLICABLE

If any no answers, explain:_____

_____

5. Water Source

(a) Well: (i) Depth ____ft. State Water Level ___ft.

(ii) Depth ____ft. State Water Level ___ft.

(iii) Depth ____ft. State Water Level ___ft.

Licence

(b) Dugout: (i) Capacity_____

(ii) Capacity_____

(c) Cistern:

(d) Other:

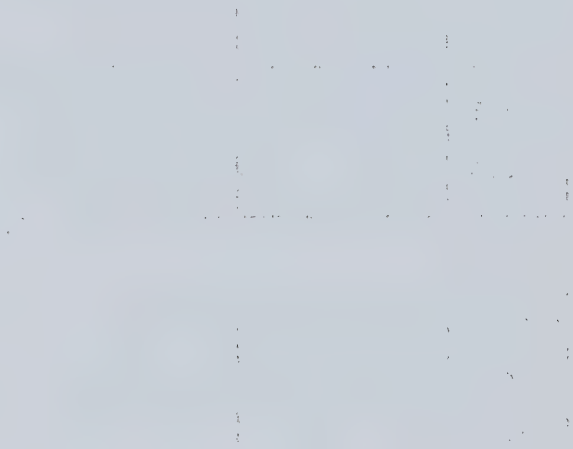
(e) Location with respect to confined livestock operation_____

_____

What precautions prevent contamination?_____

_____

(f) Is water source also used to supply residence: YES NO



6. Total Animal Units

ANIMAL	NO.	FACTOR	EXISTING	PROPOSED	TOTAL NO. OF ANIMAL UNITS
Cows and Bulls		÷ 1.0			
Feeder Cattle		÷ 1.5			
Replacement Heifers		÷ 2.0			
Calves		÷ 4.0			
Sows		÷ 1.5			
Feeder Hogs		÷ 6.0			
Hens, Cockerels		÷200			
Chicks, Broilers		÷350			
Turkey Hens		÷ 50			
Turkey Feeders		÷ 75			
Rams or Ewes		÷ 10			
Lambs		÷ 50			
Horse		÷ 1			
Mink(females & associated,males&kits)		÷100			
Others					
TOTAL					

7. Description of Feedlot or Drylot

	(a) Type	Existing	Proposed	Comments
	Open dirt lot	( )	( )	
	Open dirt lot w/shed	( )	( )	
	Paved lot w/shed	( )	( )	
	Totally covered	( )	( )	
(b)	Slope, average %	( )	( )	
(c)	Area/Animal (sq ft/A.U.)	( )	( )	
(d)	Where does run-off go?			
	On own farm	( )	( )	
	Off farm	( )	( )	
(e)	Abatement Measures			
	Diversion of off-lot surface water	( )	( )	
	Diversion of run-off	( )	( )	
	Catch basin	( )	( )	
(f)	Soil description at enclosure			
	Clay	( )	( )	
	Clay loams	( )	( )	
	Loams or sandy loams	( )	( )	
	Sand or gravel	( )	( )	

8. Description of Barn Facilities (controlled and modified environment facilities)

	(a) Type of livestock operation		
	Hog production	( )	( )
	Dairy production	( )	( )
	Poultry production	( )	( )
	Beef production	( )	( )
	Other	( )	( )

	Existing	Proposed	Comments
(b) Type of barn			
Modified environment, uninsulated & unheated	( )	( )	
Fully insulated, ventilated & heated	( )	( )	

9. Manure Management Methods

Liquid Manure

(a) Collection			
Slatted floors	( )	( )	
Manual scrape to storage	( )	( )	
Mechanical scrape to storage	( )	( )	
Water flush	( )	( )	
(b) Storage			
(i) Inside barn	( )	( )	
Under slat storage	( )	( )	
Under floor pit	( )	( )	
Length of storage period	_____	_____	
Is storage area posted for noxious gases	_____		
(ii) Outside Barn Storage	( )	( )	
Concrete pit	( )	( )	
Lagoon (see 9-e)	( )	( )	
Walled storage	( )	( )	
Other	( )	( )	
Length of storage period	_____	_____	
Is storage area posted for noxious gases	_____		

	Existing	Proposed	Comments

Solid Manure

(c) Collection

Manual Scrape	( )	( )
Mechanical Scrape	( )	( )

(d) Storage

Open stockpile	( )	( )
Open Walled Storage	( )	( )
Covered stockpile	( )	( )
Length of storage period	_____	_____
Is seepage controlled	Yes	No

-describe_____

_____

_____

_____

_____

Is fly control employed Yes No

(e) Lagoon Description

(i) Location (if more than one lagoon, assume closest one)

From barn	_____	_____
From residence on farm	_____	_____
From residence off farm	_____	_____
From water course	_____	_____

(ii) Design

Dimensions	_____	_____
	_____	_____
	_____	_____
Sub-soil type	_____	_____

	Existing	Proposed	Comments
Method of employing			
irrigation system	( )	( )	
pump and tank	( )	( )	
none	( )	( )	
Describe lining if used	_____	_____	
Is lagoon fenced to prevent access by people and animals?	_____	_____	

10. Run-off Control

Catch Basins

Area of enclosure	_____	_____
Suggested volume (see Part 1 Sec. 6. (2) - B of Code Run-off volume (if different than suggested volume, explain why)	_____	_____
Sub-soil type	_____	_____
Method of emptying	_____	_____
Describe lining if used	_____	_____

11. Manure Disposal on Land

Type of Waste		Area Available
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Location of land with respect to nearest residence or development?

_____

Method of Incorporation _____ _____

Time of Disposal

Winter

Summer

12. Expected Completion Date - _____

13. Plan of proposed or existing operation

Include:

(a) farmstead layout including enclosures and facilities

(b) location of water source(s)

(c) topographic features, e.g. slopes, watercourses, etc.

(d) location of residences, farmsteads, parks, urban centers, rivers and owners of adjacent lands. Also, location of waste disposal areas. This should be drawn on a separate plan with sufficiently large scale to include the above.

(e) additional description and optional information.

PART 6

REFERENCES

Alberta Department of Agriculture - Regional Agricultural Engineering Offices

Area	Address	Telephone No.
1. Calgary	#502, 620 - 7th Avenue, S.W. Calgary, Alberta	261-6351
2. Edmonton	6905 - 116 Street Edmonton, Alberta	435-4707
3. Fairview	P.O. Box 3000 Fairview, Alberta	835-2218
4. Lethbridge	S.S. 1, Science Building Lethbridge, Alberta	328-9633
5. Red Deer	Provincial Building Red Deer, Alberta	346-5581
6. Vermilion	P.O. Box 330 Vermilion, Alberta	853-3381

Alberta Department of Agriculture - District Extension Offices

Area	Address	Telephone No.
Athabasca	Box 480	675-2252
Barrhead	Box 850	674-3326
Bonnyville	Box 160	826-3551
Brooks	Box 788, Prov. Admin. Bldg.	362-3363
Calgary	502, 620 - 7th Ave, S.W. (200, 215A - 16th Ave. N.E.)	261-6351 (261-6281)
Camrose	5 Prov. Bldg.	672-5511
Cardston	Box 38	653-3462
Claresholm	Box 40	235-3375
Coronation	Box 160	578-3970
Drayton Valley	Box 1327	542-2601
Drumheller	Box 578	823-2381
Edmonton	(10426 - 81 Ave.)	(433-7897)
Evansburg	Box 360	727-3673
Fairview	(Box 819)	(835-2241)
Falher	Box 90	837-2211
Foremost	Box 326	867-3646
Fort Vermilion	Box 40	927-3216
Grande Prairie	Prov. Bldg.	532-4449
Hanna	Box 349	854-3700
High Level	Box 7	926-2098
High Prairie	Box 568	523-3660
High River	Box 490	652-3102

Lac La Biche	Box 389	623-4461
Lacombe	Box 99	782-3301
Lamont	Box 359	895-2420
Leduc	Box 248	446-2251
Lethbridge	Box 516, Admin. Bldg.	328-4471
Lloydminster		
Manning	Box 750	836-3651
Medicine Hat	770 - 6th St., S.W.	527-4471
Morinville	Box 416	256-3351
Olds	Box 250	226-3331
Peace River	Box 1918	926-2098 624-1253
Pincher Creek	Box 1356	627-3130
Ponoka	Box 70	783-3662
Provost	Box 600	753-2787
Red Deer	Prov. Bldg.	346-2006
Rimbey		843-2201
Rocky Mountain House	Box 700	845-3420
Ryley	Box 200	663-3574
Sangudo	County Bldg.	785-2266
Sedgewick	Box 157	384-3688
Slave Lake	Box 720 (HRDA Office)	849-3593
Smoky Lake	Box 70	656-3613
Spirit River	Box 189	864-3597
St. Paul	Box 188	645-4471
Stettler	Box 1119	742-3461
Stony Plain	Box 510	777-2231
Strathmore	Box 308	382-3355

Taber	Box 640	223-3563
Thorhild	Box 370	398-3786
Three Hills	Box 790	443-5655
Two Hills	Box 487	657-2485
Valleyview	Box 930	524-3712
Vegreville	Box 159	632-2895
Vermilion	Box 330	853-3358
Vulcan	Box 480	485-2236
Wainwright	Box 459	842-4454
Westlock	Box 429	342-3560
Wetaskiwin	Box 130	352-3347

Alberta Department of Health & Social Development - Health Inspection Services

Area	Address	Telephone No.
Provincial Department of Health & Social Development	Admin. Bldg., Edmonton	229-3050
ALBERTA EAST CENTRAL Health Unit	Box 550, Stettler 5210 - 47 Ave., Camrose	742-2103 672-3161
ATHABASCA Health Unit	Box 1140	675-2231
BANFF NATIONAL PARK Health Unit	Box 1266, Banff	762-2990
BARONS-EUREKA Health Unit	Box 328, Coaldale	345-3088
BIG COUNTRY Health Unit	Box 279, Hanna	854-3055
CHIEF MOUNTAIN Health Unit	Box 286, Cardston	653-4266
CHINOOK Health Unit	Box 727, Fort McLeod	234-3588
DRUMHELLER Health Unit	Box 1780, Drumheller	823-2464
EDSON Health Unit	Box 1718, Edson Hinton Drayton Valley	723-4421 865-2286 542-3842
FOOTHILLS Health Unit	Box 638, High River	652-2341
GRANDE PRAIRIE Health Unit	9640 - 105 Ave., Grande Prairie	532-4441
JASPER NATIONAL PARK Health Unit	Box 925, Jasper	852-3777
LEDUC-STRATHCONA Health Unit	2011 Brentwood Blvd., Sherwood Park Leduc	699-5571 446-2166
CITY OF LETHBRIDGE Health Unit	Galt Bldg., 1 St. & 5 Ave., Lethbridge	327-2166
MEDICINE HAT Health Unit	770 - 1 St., S.E. Medicine Hat	527-1136
MINBURN-VERMILION Health Unit	Vermilion	853-3270
MOUNT VIEW Health Unit	2202 - 3 St., N.E. Calgary Didsbury	276-2286 335-3233
NORTH EASTERN ALBERTA Health Unit	St. Paul	645-3396

Area	Address	Telephone No.
PEACE RIVER Health Unit	Peace River High Prairie	624-3611 523-3092
RED DEER Health Unit	4758 - 32 St., Red Deer	347-1166
STONY PLAIN-LAC STE. ANNE Health Unit	Stony Plain Box 467, Whitecourt	777-2206 778-2877
STURGEON Health Unit	Box 174, St. Albert Westlock	599-6671 342-3316
VEGREVILLE Health Unit	Vegreville	632-3331
COUNTY OF WARNER Health Unit	Box 251, Raymond	752-3212
WETOKA Health Unit	Wetaskiwin Ponoka	352-3337 783-3719
NORTHERN ALBERTA HEALTH SERVICE	426 Admin. Bldg., Edmonton	229-3250
CITY OF CALGARY Health Department	Box 2100, Calgary	269-0110
CITY OF EDMONTON Health Department	787 CN Tower, Edmonton	425-6098

Alberta Department of Labour Inspection Offices

Area	Inspector	Address	Telephone No.
Calgary	electrical	J. J. Bowlen Bldg., Calgary	268-8355
	gas	J. J. Bowlen Bldg., Calgary	268-8353
	plumbing	J. J. Bowlen Bldg., Calgary	261-6450
Camrose	electrical	Prov. Bldg., Camrose	672-2995
	gas	Prov. Bldg., Camrose	672-5933
	plumbing	Prov. Bldg, Red Deer	346-4220
Drumheller	electrical	Prov. Bldg., Box 967 Red Deer	823-2895
	gas	Prov. Bldg., Box 967 Red Deer	823-2895
	plumbing	J. J. Bowlen Bldg., Calgary	261-6450
Edmonton	electrical	IBM Bldg., Edmonton 6	229-3693
	gas	IBM Bldg., Edmonton 6	229-3590
	plumbing	IBM Bldg., Edmonton 6	429-6987
Grande Prairie	electrical	206 Prov. Bldg., Grande Prairie	532-2980
	gas	206 Prov. Bldg., Grande Prairie	532-2980
	plumbing	To be announced	
Lethbridge	electrical	Admin. Bldg., 909 - 103 Ave. Lethbridge	328-4471
	gas	Admin. Bldg., 909 - 103 Ave. Lethbridge	328-4471
	plumbing	Admin. Bldg., 909 - 103 Ave. Lethbridge	328-4471
Medicine Hat	electrical	770 - 6 St., S.W. Medicine Hat	527-6626
	gas	770 - 6 St., S.W. Medicine Hat	527-6628
	plumbing	Admin. Bldg., 909 - 103 Ave. Lethbridge	328-4471
Peace River	electrical	IGA Bldg., Box 985, Peace River	624-3267
	gas	IGA Bldg., Box 985, Peace River	624-3267
	plumbing	To be announced	

Area	Inspector	Address	Telephone No.
Red Deer	electrical	Professional Bldg., Red Deer	347-1277
	gas	Professional Bldg., Red Deer	347-1277
	plumbing	Prov. Bldg., Red Deer	346-4220
Vermilion	electrical	Imperial Block 4840 - 50 Ave., Vermilion	853-4035
	gas	Imperial Block 4840 - 50 Ave., Vermilion	853-4035
	plumbing	To be announced	

Regional Planning Offices

Area	Address	Telephone No.
Battle River	Battle River Regional Planning Commission Box 1570, Wetaskiwin	325-2215
Calgary	Calgary Regional Planning Commission 339 - 58 Ave., S.E., Calgary 27	252-8147
Edmonton	Edmonton Regional Planning Commission 602, 10025 - 106 St., Edmonton 14	423- 423-3111
Lethbridge	Oldman River Regional Planning Commission 1003 - 4 Ave., S., Lethbridge	328-3371
Medicine Hat	Medicine Hat Regional Planning Commission 419 - 3 St., Medicine Hat	527-3326
Peace River	Peace River Regional Planning Commission R. R. #2, Wapiti Road, Grande Prairie	532-3813
Red Deer	Red Deer Regional Planning Commission 4910 - 59 St., Red Deer	346-3394
Other Areas	Provincial Planning Branch 8th Floor, 9912 - 107 St., Edmonton	429-4821

Improvement Districts

District No.	Address	Telephone No.
1, 2, 4, 5, 6	Room 307, Provincial Administration 770 - 6 St., S.W., Medicine Hat T1A 4J6	526-3477
7, 8, 9	Room 602, 620 - 7 Ave., S.W. Calgary T1A 5C1	268-8313
10, 11	Box 550, Rocky Mountain House T0M 1T0	845-3520
12, 14	Box 1240, Edson T0E 0P0	723-3939
14, 15	Box 205, Evansburg T0E 0T0	727-3600
18, 24	Box 23, Lac LaBiche T0A 2C0	623-4675
15, 17	Box 898, Westlock T0G 2L0	342-3788
17	Box 239, High Prairie T0G 1E0	523-3010
19, 20, 21	Box 69, Spirit River T0H 3G0	864-3760
17, 22	Box 96, Peace River T0H 2X0	624-2476
16	Box 177, Valleyview T0H 3N0	524-3193
23	Box 66, High Level T0H 1Z0	926-3802

Alberta Department of Environment - Regional Offices

Area	Address	Telephone No.
Calgary	J. J. Bowlen Building 620 - 7 Ave., S.W. Calgary	268-8329
Edmonton	Milner Building 10040 - 104 St. Edmonton	425-1130
Fort Chip - Fort McMurray	Fort Chipewyan Management Office Fort Chipewyan	497-3733
Lethbridge	Administration Building Third Ave. - Ninth St., N. Lethbridge	328-4471
Peace River	Joe's Electric Building Peace River	624-1460
Whitecourt	5012 - 52 Ave. Whitecourt	778-2662 778-3414